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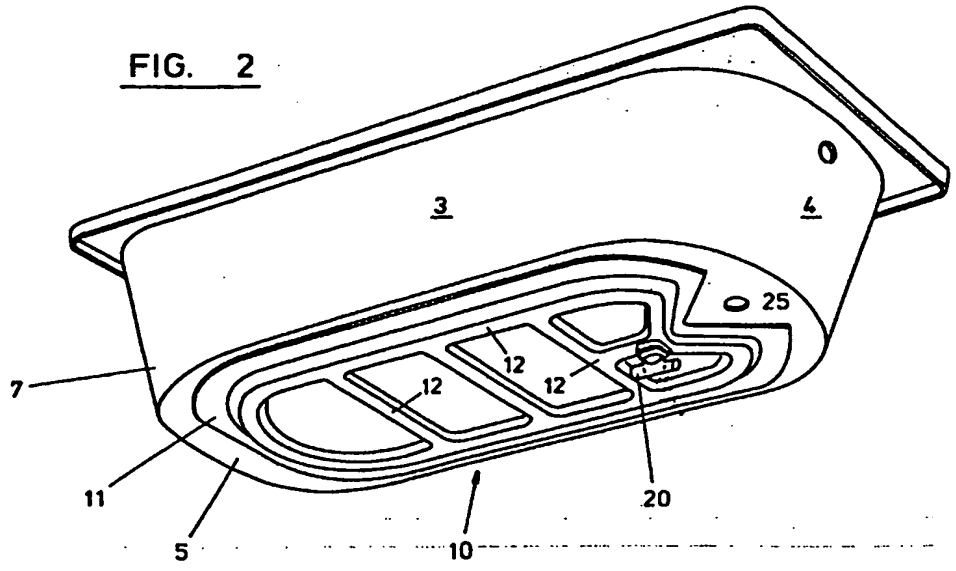
(54) Bath fitting to provide jets of air and/or water

(57) A fitment for adapting a bath for ejection of air and/or water from a plurality of apertures drilled in the base of the bath comprises a channel member (10) having formed therein a plurality of channels (12), the channels being linked together to form a close circuit loop for the passage of air and/or water underneath the floor portion of the bath.

A water air mixture is forcibly introduced into the channels and ejected from the apertures in the bath.

FIG. 2



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At least one drawing originally filed was informal and the print reproduced here is taken from a later filed formal copy.

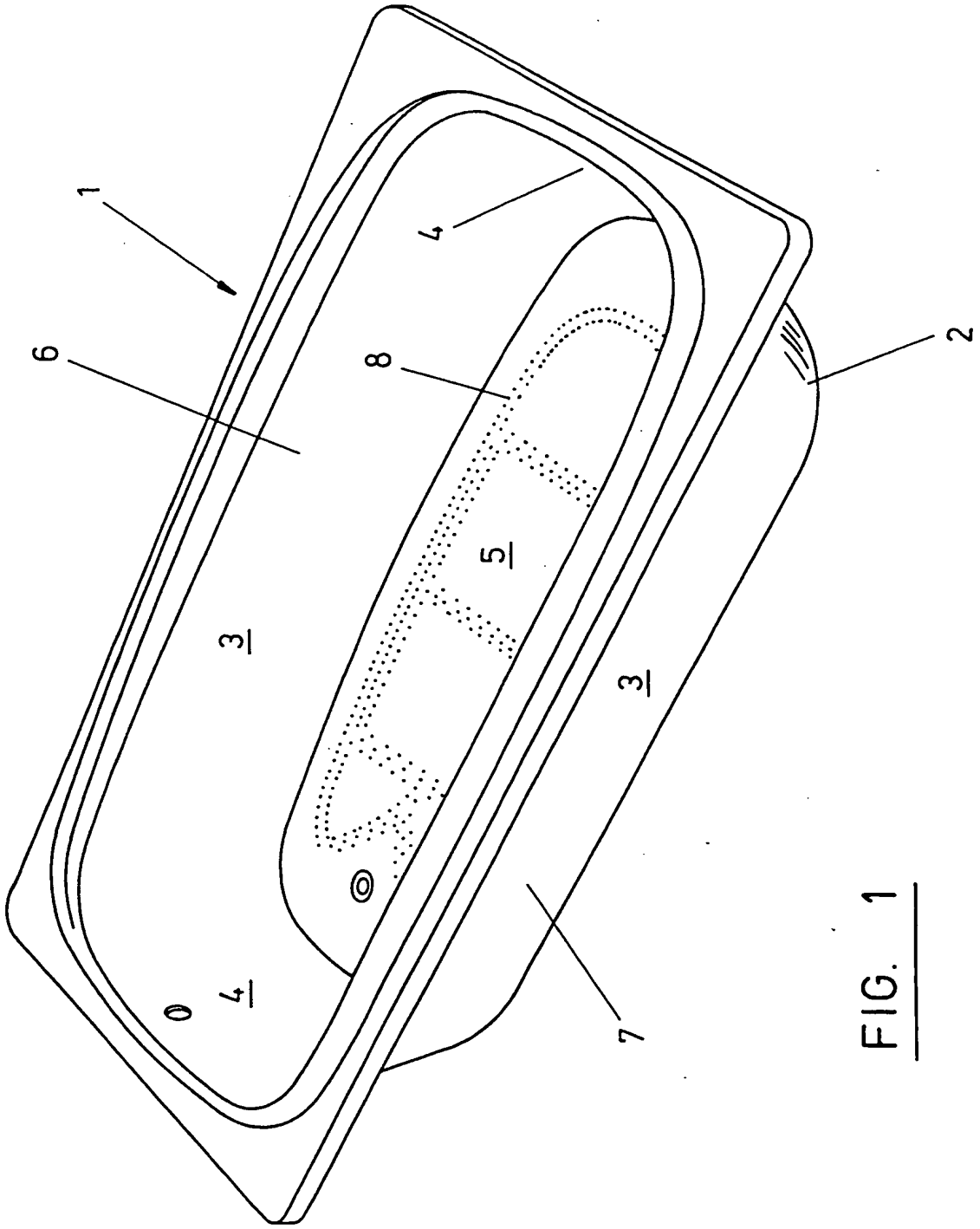

FIG. 1

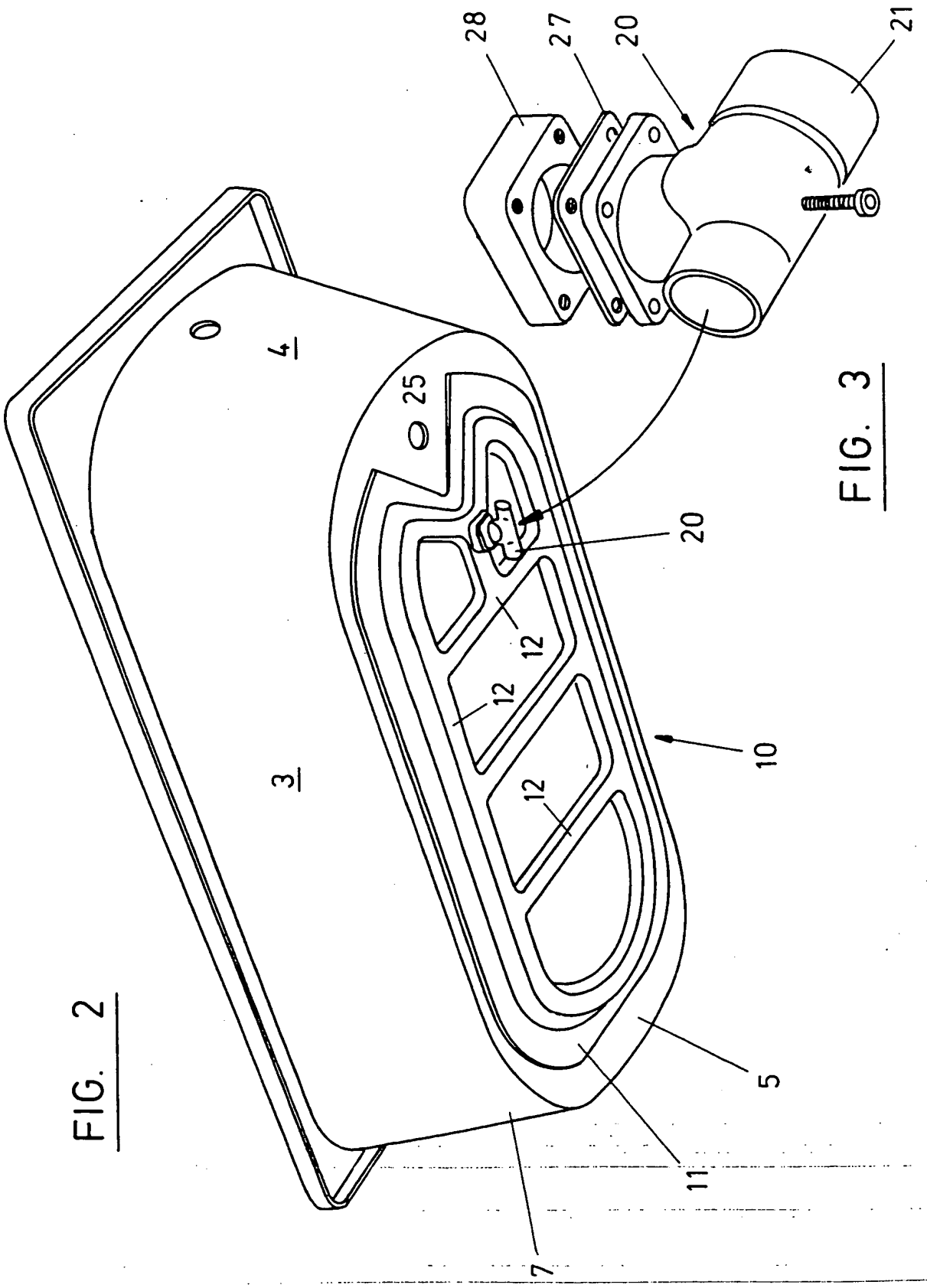

FIG. 2

FIG. 3

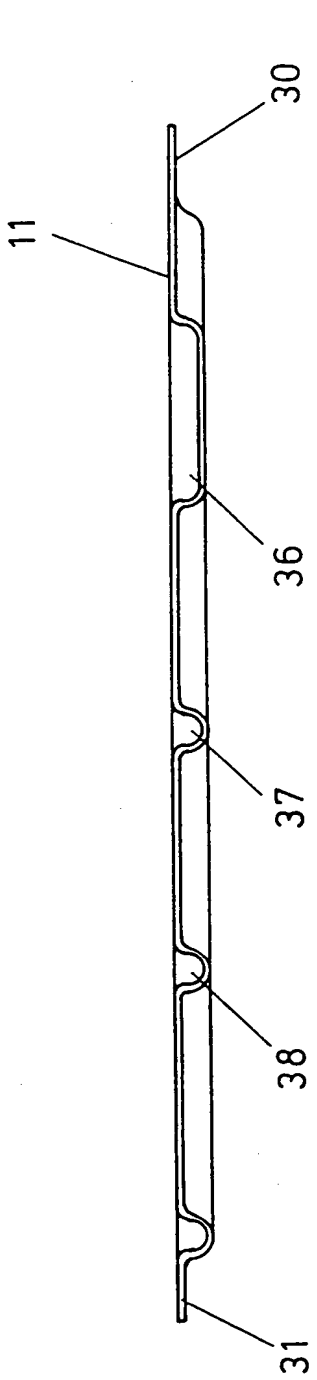

FIG. 5

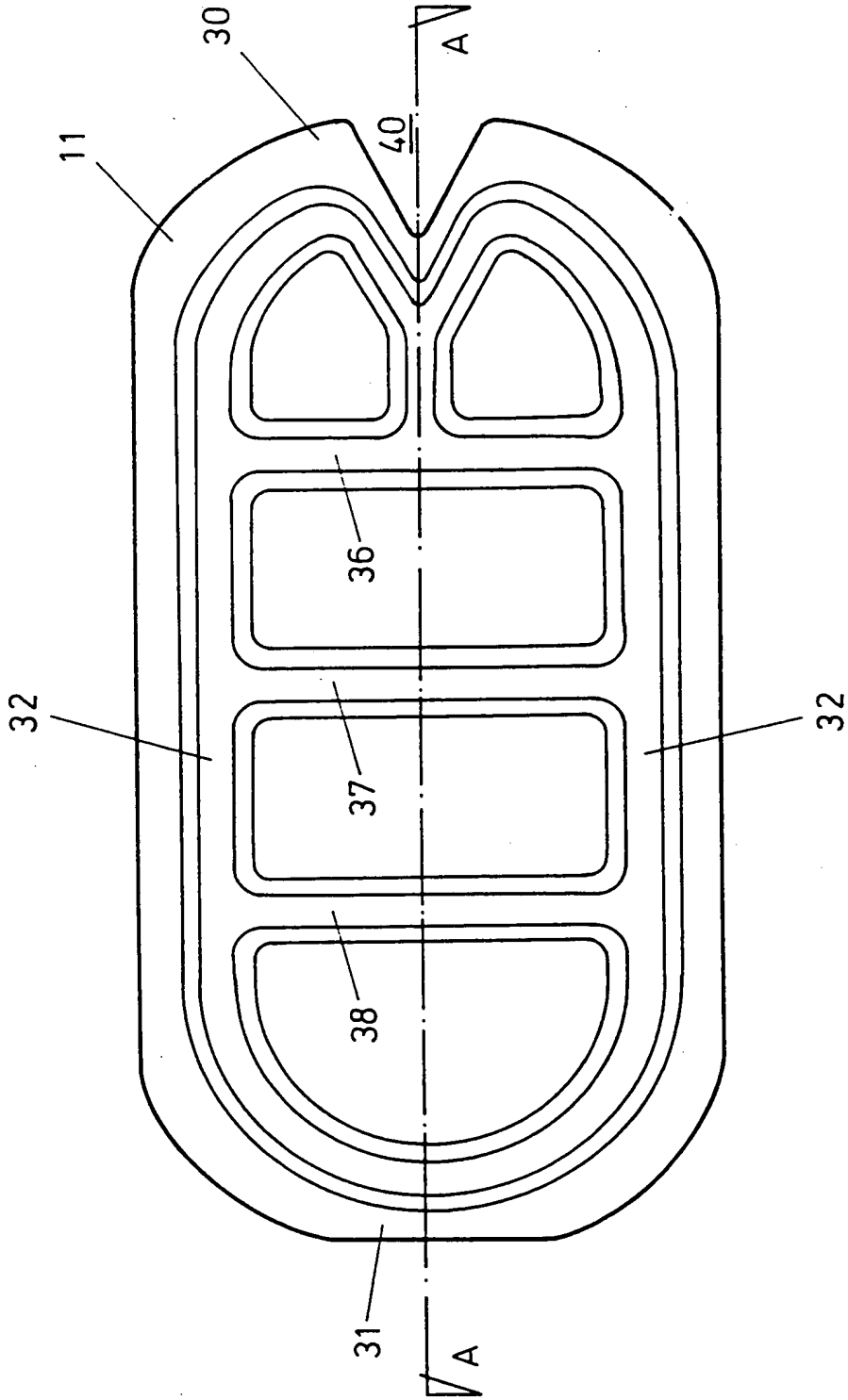

FIG. 4

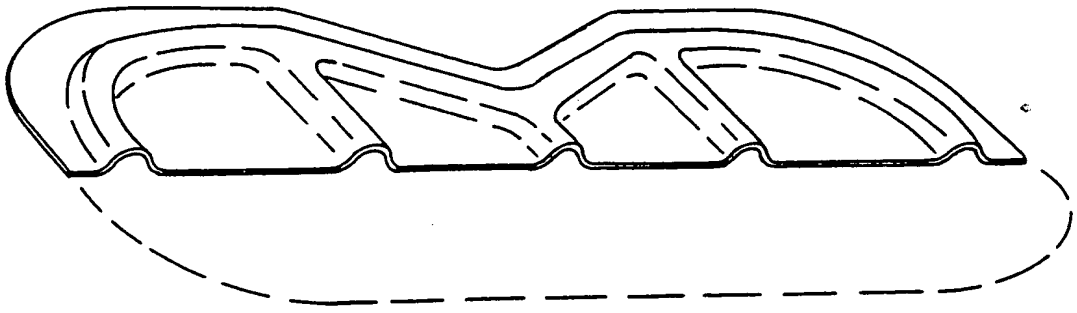

FIG. 6

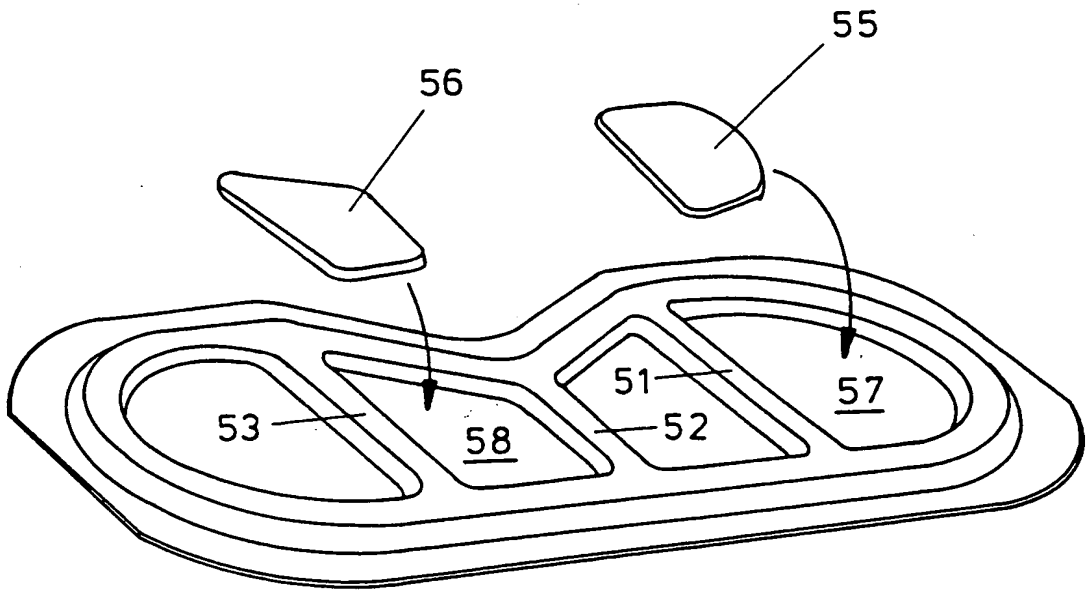

FIG. 7

BATH FITTING

The present invention relates to bathing equipment such as baths and other like items and fittings for such items, and particularly although not exclusively to baths and fittings for baths which provide jets of air and/or water.

Conventional baths of the type having a whirlpool facility in which jets of water are propelled from apertures in the sides of the bath, comprise a bath tub having a number of nozzle outlets through which water is forced into a quantity of water contained in the bath tub. Such conventional whirlpool baths include a rigid pipe network for carrying water to the jet nozzles from a high pressure water pump at one end of the bath. The pipe network is bulky, heavy, and expensive.

When the bath is drained, water may remain in the pipe network around the outside of the bath tub, and if left for long periods may stagnate. Thus, thorough periodic cleaning of the pipe network is required.

Embodiments of the present invention aim to solve some of the aforementioned problems.

According to one aspect of the present invention there is provided a channel member adapted to attach to an outer surface of a skin of a domestic washing receptacle, the channel member comprising a baseplate member shaped to closely fit the skin of the receptacle, the baseplate member being formed with a plurality of channels, the arrangement being that when the channel member is fitted to the skin of the receptacle, air and/or water contained in the channels may be ejected through a plurality of apertures formed in the skin.

Preferably, the channels in the baseplate are open when the channel member is not fitted to the skin. Preferably, the baseplate is adapted to closely fit to the receptacle skin, such that when the open channels are abutted to the skin, the skin substantially closes the channels to provide a plurality of passages defined by the channels and the skin, through which water and/or air may flow. Thus, the baseplate may be formed separately from the skin of the washing receptacle, eg a domestic bath, and may be provided as a retrospectively fittable item to suit a range of existing baths. The channel member is suitably shaped to fit closely to the receptacle skin, eg the floor of a bath.

Preferably, the channel member is shaped to fit an underside of a floor portion of the receptacle skin, wherein the apertures are formed in the floor portion such that the air and/or water is released upwardly via the apertures in the floor portion.

Preferably, the baseplate is capable of attachment to the outer surface of the skin by means of an adhesive, making a water/air tight seal between the baseplate and the skin.

Preferably, in use, said passages form a substantially closed loop circuit. Thus the pressure of water and air in the closed loop of passages may force the water/air out of the apertures. A first elongate channel may be arranged to extend in a loop circuit around the floor of the receptacle, and at least one further channel arranged to extend across the floor of the receptacle and connecting with the first elongate channel.

The channel member may be provided with an outlet port for drainage of fluids from said channels and/or passages.

The channel member may comprise means for connecting said outlet with a conventional waste outlet fed from a plug hole for draining the receptacle. The channel member may comprise means for feeding air into said channels or passages.

Preferably, the means for feeding air comprises a tubular connector. The means may also comprise an air or water pump.

The tubular connector may comprise a tubular stem portion and first and second tubular branches connected to the stem, the connector being adapted for attachment to the baseplate to connect with a channel thereof, such that air may be injected via the first branch and stem for passage of air into the channels, and water may drain from the channels via the stem and the second branch for drainage of water from the passages.

Preferably, the channel member is adapted for fitment to a bath. The invention includes a bath or other washing receptacle fitted with a channel member as described above.

The invention includes other, more specific features, as described hereunder with reference to specific embodimemts of the present invention.

For a better understanding of the invention, and to show how embodiments of the same may be carried into effect, reference will now be made, by way of example, to the accompanying diagrammatic drawings, in which:

Figure 1 shows in general view a bath tub according to a first specific embodiment of the present invention;

Figure 2 shows an underside of the bath tub of figure 1;

Figure 3 shows a means for feeding air and/or water into an underside of the bath tub of figures 1 and 2;

Figure 4 shows in plan view a channel member comprised in the specific embodiment of the present invention;

Figure 5 shows in cut away view, a section along the line A-A of the channel member of figure 4;

Figure 6 shows in partial cut away view an underside of another channel member according to a third specific embodiment of the present invention; and

Figure 7 shows in perspective view an underside of the channel member of figure 6.

Referring to figure 1 of the accompanying drawings, a bath tub 1 comprises a bath tub skin 2 forming side walls 3 and end walls 4 and a floor portion 5, the skin having an interior surface 6 which comes into contact with water contained in the bath when the bath is filled, and an exterior surface 7 which, in use, is normally concealed behind a decorative panel facing. The bath tub is provided with a plurality of apertures 8, preferably in the floor portion of the tub, through which air and/or water may be forcibly ejected. Where the apertures are provided in the floor portion of the bath tub skin, the

air and/or water may be forcibly ejected upwardly into a volume of water contained in the bath.

Referring to figure 2 of the accompanying drawings, there is shown an underside view of the bath of figure 1. Attached to an underside of the floor portion 5 of the skin, is a channel member 10, the channel member being in the form of a base plate 11, having formed therein a plurality of U-shaped channels 12, the channels being linked together to form a closed circuit loop for the passage of air and/or water underneath the floor portion of the bath skin. The apertures 8, which are formed in the floor portion of the skin are arranged to coincide with the channels 12 of the channel member, when the base plate is attached to the underside of the bath tub skin. The channel member is shaped such as to closely fit to the outer surface of the bath tub skin, underneath the floor portion.

At a first end of the channel member is provided a T-shaped tubular connector 20 for performing the combined function of feeding air into the channels, the air being provided by a separate air pump attached to an inlet branch 21 of the T-shaped connector (the separate air pump not shown in figure 2), and of draining the channels of water via an outlet arm 22 of the T-shaped connector when the bath is not in use. The outlet branch arm 22 of the connector may be connected to a conventional waste outlet pipe connected to a plug hole 25 of the bath tub. To prevent water draining from the channels via the outlet branch when the bath is in use, a separate tap, or valve or a one way valve may be provided between the outlet branch arm 22 and the waste outlet.

Referring to figure 3 of the accompanying drawings, the T-shaped connector is provided with a flange connection 23 on a tubular stem of the connector, the tubular stem linking the inlet and outlet branches with the channels, via an outlet aperture provided on one of the channels. The flange connects the outlet aperture of the channel to the stem of the connector 20, by means of bolts or rivets. There is also provided a gasket 27 and a rubber grommet 28 for flexibly connecting the T-shaped connector with the channel member, the grommet and gasket to allow some variation in movement for connection of pipe work to the first and second branches, whilst still allowing a water tight seal between the stem of the T-shaped connector and the channel member.

Referring to figures 4 and 5, there is shown in more detail the channel member of figure 2.

Referring to figure 4, there is shown the channel member of figure 2 in underside view. The channel member comprises a baseplate 11, which in this embodiment is a flat sheet of material, the baseplate having a first end 30 and a second end 31 between which, a perimeter loop channel 32 extends, the loop channel comprising a first length running in a first path along one side of the baseplate between the first and second ends, a second length following an arced path at the second end 31 of the baseplate, and a third length extending along a second path between the second end and the first end along a second side of the baseplate. Connecting the first length of the perimeter loop channel and the third length of the perimeter loop channel are a plurality of transverse channels 36, 37, 38 extending between the two longitudinally extending first and third lengths of the perimeter channel.

At the first end of the channel member, there is provided a "V" shaped indent 40 which allows for fitment of the channel member to the underside of the floor portion of the bath skin, the V-shaped portion allowing space for the plug outlet 25 of the bath.

Referring to figure 5 of the accompanying drawings, there is shown the channel member in cut away view along a section A-A. The cut away view shows in cross sectional view, the U-shaped channels 33, 36, 37, 38 in the closed loop channel network.

In use the channel member may be formed as a separate structure from the bath tub. The channel member may be vacuum formed, pressure formed, or injection moulded in any suitable plastics or other material, eg. pressed aluminium, or may be formed of glass fibre/resin in a mould. The shape and curvature of the channel member is arranged so as to closely fit the outer surface of the bath tub skin. The portions of the baseplate surrounding the channels may be stuck to the outer skin of the bath tub using adhesive, and when the channel member is in place, the positions of plurality of apertures 8 may correspond to the channels, with the effect that the open upper portion of the U-shaped channels of the channel member is closed off by the bath tub skin to form a labyrinthine network of passages through which water and/or air may flow under pressure from a pump, the air and/or water being ejected via the apertures in the skin, to produce jets of air/water directed towards the inside of the bath tub.

The bath tub skin may be pre-drilled with the apertures, in a predetermined pattern to match the pattern of channels of the channel member.

A plurality of channel members may be attached to a bath at various places around the bath, for example one under a floor portion of the bath, and one on either of the two side portions 3 of the bath tub skin. However, in a preferred version, one channel member is used per each bath.

In a further embodiment, the apertures in the bath tub skin may be provided with covers which may be fixed to the apertures, by push fit, screw fit or otherwise, to provide decorative jet outlets through which a jet of air/water may pass. Such decorative outlets may be fitted to the bath tub skin, prior to fitment of the channel member on the outer surface of the skin.

In use, the bath is filled with water, and water seeps through the apertures in the skin and into the passages enclosed by the channels of the channel member and the outer skin. Air is injected under pressure through the inlet branch 20 of the air feeding means, ie. the T-shaped connector, such that the air pressure causes water and/or air bubbles to be forced out of the apertures under pressure, forming jets which create a turbulent condition in the water contained in the bath, creating aeration of the bath water.

As water continually falls through the apertures in the bath skin, and into the passages formed by the channel member and the skin, and as air pressure continually forces and/or water out of the apertures, a continuous process of ejection of water/air from the passages and replenishment of water into the passages occurs. Suitably, the size and number of apertures in the skin is optimised such that the rate of water flowing into the passages and the pressure and volume of air being forced

into the passages provides an optimum compromise mixture of air/water forced through the apertures to provide a required turbulence effect in the water.

Referring to figures 6 and 7 of the accompanying drawings, another embodiment of channel member is provided, suitable for fitting to a bath having a plug hole and waste pipe at one side of the bath.

The channel member comprises a baseplate, having a perimeter channel 50 extending in the loop around the baseplate, the perimeter loop extending, in use, longitudinally along one side of a bath floor, following a "V" shaped path to avoid a plug hole position, extending in an arc at a first end of the bath, extending longitudinally along a second side of the bath floor, and extending in another arc at a second end of the bath, to link up onto itself, forming the closed loop, the perimeter loop being cross connected by a plurality of linking channels 51, 52, 53, such that the linking channels are in use arranged along a transverse axis of the bath, whilst the perimeter channel extends in a loop around the underside of the bath floor.

Apart from the provision of a "V" shaped detour in one longitudinal part of the loop channels, otherwise, the channel member of figures 6 and 7 is similar to the channel member of figures 4 and 5.

The channel member may be optionally provided with chipboard, plywood or similar inserts 55,56 to fit into the baseplate areas 57,58 respectively, surrounded by the channels, the clipboard/plywood inserts being fixed by conventional adhesives such that when a bath tub is supported on a flat surface, the weight of the bath is

transmitted via the chipboard or plywood inserts, the baseplate and the floor of the skin, without placing pressure on the channels, and thereby avoiding damage to the channels. Further, the chipboard inserts may serve to protect the channels from damage when a number of channel members are stacked one on top of the other.

Whilst embodiments of a channel member according to the present invention have been herein shown as fitted to a bath, other embodiment channel member may be applied to other water containing washing, for example shower trays, hand basins, bidets etc.

The reader's attention is directed to all papers and documents which are filed concurrently with or previous to this specification in connection with this application and which are open to public inspection with this specification, and the contents of all such papers and documents are incorporated herein by reference.

All of the features disclosed in this specification (including any accompanying claims, abstract and drawings), and/or all of the steps of any method or process so disclosed, may be combined in any combination, except combinations where at least some of such features and/or steps are mutually exclusive.

Each feature disclosed in this specification (including any accompanying claims, abstract and drawings), may be replaced by alternative features serving the same, equivalent or similar purpose, unless expressly stated otherwise. Thus, unless expressly stated otherwise, each feature disclosed is one example only of a generic series of equivalent or similar features.

The invention is not restricted to the details of the foregoing embodiment(s). The invention extends to any novel one, or any novel combination, of the features disclosed in this specification (including any accompanying claims, abstract and drawings), or to any novel one, or any novel combination, of the steps of any method or process so disclosed.

CLAIMS

1. A channel member adapted to attach to an outer surface of a skin of a domestic washing receptacle, the channel member comprising an elongate baseplate member shaped to closely fit the skin of the receptacle, the baseplate member being formed with a plurality of channels, the arrangement being that in use, when the channel member is fitted to the skin of the receptacle, air and/or water contained in the channels may be ejected through a plurality of apertures formed in the skin.

2. A channel member according to claim 1, wherein, the channels in the baseplate are open when the channel member is not fitted to the skin.

3. A channel member according to any one of the preceding claims, which is shaped to fit closely to the receptacle skin.

4. A channel member according to any one of the preceding claims, wherein the baseplate is adapted to closely fit to the receptacle skin, such that when the open channels are abutted to the skin, the skin substantially closes the channels to provide a plurality of passages defined by the channels and the skin, through which water and/or air may flow.

5. A channel member according to claim 4 wherein, in use, said passages form a substantially closed loop circuit.

6. A channel member according to any one of the preceding claims, which is shaped to fit an underside of a floor portion of the receptacle skin, wherein the

apertures are formed in the floor portion such that the air and/or water is released upwardly via the apertures in the floor portion.

7. A channel member according to any one of the preceding claims, wherein the baseplate is capable of attachment to the surface of the skin by means of an adhesive.

8. A channel member according to any of the preceding claims, which is provided with an outlet port for drainage of fluids from said channels and/or passages.

9. A channel member according to claim 8 comprising means for connecting said outlet with a conventional waste outlet fed from a plug drainage hole of the receptacle.

10. A channel member according to any one of the preceding claims further comprising means for feeding air into said channels or passages.

11. A channel member according to claim 10, in which said means comprises a tubular connector.

12. A channel member according to claim 11, in which the tubular connector comprises a tubular stem portion and first and second tubular branches connected to the stem, the connector being adapted for attachment to the baseplate to connect with a channel thereof, such that air may be injected via the first branch and stem for passage of air into the channels, and water may drain from the channels via the stem and the second branch for drainage of water from the passages.

13. A channel member according to any one of the preceding claims, having a first elongate channel arranged to extend in a loop circuit around the floor of the receptacle, and at least one further channel arranged to extend across the floor of the receptacle and connecting with the first elongate channel.

14. A channel member according to any one of the preceding claims adapted for fitment to a bath.

15. A bath fitted with a channel member as claimed in any one of claims 1 to 14.

16. A channel member substantially as herein before described with reference to the accompanying drawings.

17. A bath fitted with a channel member substantially as herein before described with reference to the accompanying drawings.

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Patents Act 1977
Examiner's report to the Comptroller under Section 17
(The Search report)

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Relevant Technical Fields

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Search Examiner
D HAWORTH

Date of completion of Search
20 JUNE 1995

Databases (see below)
(i) UK Patent Office collections of GB, EP, WO and US patent specifications.

(ii) ONLINE

Documents considered relevant following a search in respect of Claims :-
1-17

Categories of documents

X: Document indicating lack of novelty or of inventive step.

Y: Document indicating lack of inventive step if combined with one or more other documents of the same category.

A: Document indicating technological background and/or state of the art.

P: Document published on or after the declared priority date but before the filing date of the present application.

E: Patent document published on or after, but with priority date earlier than, the filing date of the present application.

&: Member of the same patent family; corresponding document.

Category	Identity of document and relevant passages		Relevant to claim(s)
X,Y	GB 2176101 A	(AQUAKRAFT)	1-17
X,Y	EP 0063734 A	(BAUMANN)	1-17

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